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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|----------------------------------|------------------|
| 10/089,136 | 12/23/2002 | Wolfgang Heimberg | REN-13087/5800US | 2520 |
| 39878 7590 12/18/2006 MIN, HSIEH & HACK LLP 1951 KIDWELL DRIVE SUITE 550 TYSONS CORNER, VA 22182 | | | EXAMINER LEVKOVICH, NATALIA A | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1743 | |
| SHORTENED STATUTORY PERIOD OF RESPONSE | | MAIL DATE | DELIVERY MODE | |
| 2 MONTHS | | 12/18/2006 | PAPER | |

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/089,136
Filing Date: December 23, 2002
Appellant(s): HEIMBERG, WOLFGANG ET AL.

HEIMBERG, WOLFGANG

Ms. Barabara A. Fisher
Mr. Timothy M. Hsieh
For Appellant

EXAMINER'S ANSWER

MAILED
DEC 18 2006
GROUP 1700

This is in response to the appeal brief filed 06/12/2006 appealing from the Office
action mailed 12/27/2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

Claims 19-52 are pending in the instant application.

Claims 19-38 and 41-52 are rejected.

Claims 39-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

The following is a listing of the evidence(e.g., patents, publications, admitted prior art) relied upon in the rejection of claims under appeal.

| | | |
|------------|---------------|---------|
| US 5601141 | Gordon et al. | 2-1997 |
| US 6093370 | Yasuda et al. | 7-2000 |
| US 5819842 | Potter et al. | 10-1998 |

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 19-38 and 41-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gordon et al. in view of Yasuda et al. or Potter et al.

Gordon discloses a modular thermo-cycler “that carries a large batch of samples through one or more predetermined temperature profiles” and comprises a base and an array of modules mounted on the base. The modules are “substantially isolated from one another, thermally and functionally... The module has a temperature sensor adjacent the samples, an electrical resistance heating element, and a circulating fluid heat exchanger for step cooling... The modules are preferably formed in three layers--a sample plate, a heater plate, and a cooling plate adjacent to a manifold... The sample plate is preferably replaceably secured at the upper surface of the module on the heating plate... The sample plate is adapted to receive a standard micro-titration plate, or other labware, in a close, heat-transmitting engagement [which may comprise recesses-Examiner]... The heater plate and cooling plate may be formed integrally...” (Abstract, Col.1, line 5; Col.2, lines 10-40).

Although Gordon teaches modules being thermally and functionally isolated from one another, each module is configured to receive a separate plate, rather than a segment of a plate, as recited in claims 19 and 51.

Yasuda discloses a sample plate having means for individual heating of specific areas of a single substrate 13, comprising a plurality of heating elements 21 thermally decoupled by gaps (Figures 3-4; Col. 7, line 5-60).

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Additionally, Potter et al. (US 5,819,842) discloses a 'device for the individual, controlled heating of several samples. This device has several flat heating elements [which may be Peltier heating / cooling elements – Ex.] arranged in a grid pattern... The samples are poured into the recesses of the grid plate...' which comprises a single plate (which can be considered a non-standard micro-titer plate). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Gordon such that it would provide individual and independent heating / cooling of separate segments of a single micro-plate (compared to individual and independent heating / cooling of an array of micro-plates), in order to increase the scope of scalability of the device, and, consequently, to enhance its commercial / marketing value.

With respect to claims 21-22, the base can be "changed easily to accommodate different sample holders adapted to different labware, or to hold samples directly" (Col.4, line 20). For example, Figure 4 shows micro-titration plate P disposed over plate 14a ['reaction vessel receiving element comprised of base with one or more tubular, thin-walled reaction vessel holders' – Ex.].

In reference to claims 23-24, Gordon teaches that "the modules ['segments'-Ex.] are spaced laterally, from one another ['decoupled by means of air gaps'-Ex.] which in combination with forming the base of the insulator, provides a good degree of thermal isolation of each module" (Col.3, lines 40-45).

As to claim 27 and 29-30, Gordon refers to the use of Peltier elements for heating or cooling as being well known in the art.

With regards to claim 31-34, 41 and 45-48, Gordon teaches that “a controller regulates the electrical current and cooling fluid flows to each module in response to a signal from a temperature sensing element associated with each module...The controller operates in response to the sensed temperature”. The cooling fluid can be water. (Col.2, lines 15-20; Col.4, line 45; Col.5, line 55). Since the central controller monitors each module individually and independently, the modules ['segments'-Ex.] can be actuated in any order.

With respect to claims 35-38, Gordon specifies that “the modules ... are preferably arrayed in four rows of four modules each... The cycler ...is adapted to heat and cool sixteen standard micro-titration plates ... simultaneously, although the precise number of plates ... being processed is not limited to sixteen (Col.3, lines 30-45).

Referring to claims 41-42, Gordon discloses individual temperature sensors (see the discussion above).

With respect to claims 43-44, Gordon teaches that, “because the plate P is a thin plastic sheet and sample plate 14a is highly conductive [that is, in fact, acts as a ‘temperature equalization element’-Examiner], there is good heat transfer between the samples held in the plate (or directly in a depression 14a') and the plate 14a itself when the plates are in a close physical contact. In practice the sample temperature equilibrates with the plate 14a quickly, with the precise period ...”(Col.4, line 25; Figures 1-3).

As to claims 49 and 50, these are limitations to the process of using the device, which are not attributed patentable weight in a claim to the apparatus. It would appear

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that the apparatus of Gordon et al. is capable of operating in this manner as the structure is identical to that claimed.

Upon further consideration and in light of arguments presented by Appellants in the Appeal Brief (the arguments being found persuasive), claims 39-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Although mechanical attachment means are well known in the art (for example, Gordon teaches in column 2, line 30 that "the heater plate and cooling plate may be ... secured in a stack" mechanically), the prior art, does not teach, or fairly suggest the device having the features recited in claim 19 where the segments, on their side edges, additionally have 'downwards-facing hooks by which they rest on ties'.

(10) Response to Argument

Appellants request clarification on the status of *Potter et al.* in the 'rejection combination', since, although Examiner 'appears to rely on the reference', the latter was not properly identified in the header of the corresponding paragraph. Examiner regrets the inconveniencies caused by this omission, which was clearly a typographical error, and confirms that Appellants' assumption is correct and *Potter et al.* was, indeed, relied upon in the rejection, which can be supported by the fact that *Potter et al.* was cited even more abundantly than *Yasuda et al.*

Appellants argue that *Gordon et al.* disclose 'sixteen reaction vessel receiving elements', each designed to receive one standard micro-titer plate, rather than one segmented reaction vessel receiving element configured to receive one micro-titer plate.

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Examiner notes that independent claims 19 and 51 do not limit the micro-titer plate to being standard. In fact, the device of Gordon is capable of providing the functionality recited in the claims and to accommodate a non-standard micro-titer plate having dimensions bigger than those of a standard one (with the amount of wells also not specified in the claims).

Appellants state that the sample plate of *Yasuda et al.* is a micro array chip which cannot be considered a micro-titer plate receiving element, but 'merely perpetuates the modular configuration of *Gordon et al.*' Examiner agrees with this statement. *Yasuda et al.* do not disclose a micro-titer plate receiving element. The element is disclosed by *Gordon et al.* The device of *Yasuda et al.* supports the concept of modular heating / cooling of a single plate.

Appellants disagree with the motivation to combine Gordon and Yasuda provided by the Examiner. The Office maintains that it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of Gordon such that it would provide individual and independent heating / cooling of separate segments of a single micro-plate (compared to individual and independent heating / cooling of an array of micro-plates), in order to increase the scope of scalability of the device, and, consequently, to enhance its commercial / marketing value.

Appellants argue that the cited references do not teach the 'subject matter of claims 21 and 22'. Examiner disagrees. Figure 4 of Gordon shows micro-titration plate P disposed over plate 14a ['reaction vessel receiving element comprised of base with

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one or more tubular, thin-walled reaction vessel holders comprising one piece with the base plate' – Ex.].

Appellants state that the cited references do not teach 'downwards facing hooks' by which the segments 'rest on ties'. This is found persuasive. Although mechanical attachment means are well known in the art (for example, Gordon teaches in column 2, line 30 that "the heater plate and cooling plate may be ... secured in a stack" mechanically), the prior art, does not teach, or fairly suggest the device having the features recited in claim 19 where the segments, on their side edges, additionally have 'downwards-facing hooks by which they rest on ties'. For the above mentioned reasons, claims 39-40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Appellants argue that the applied references 'fail to teach or suggest selective actuation of either the modules or plates disclosed'. Examiner disagrees. As was previously discussed, the central controller of Gordon monitors each module individually and independently. That means the modules /'segments' can be actuated in any order.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

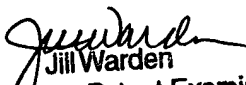
Copies of the court or Board decision(s) identified in the Related Appeals and Interferences section of this examiner's answer are provided herein.

For the above reasons, it is believed that the rejections should be sustained.

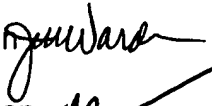
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Respectfully submitted,

Natalia A. Levkovich


Jill Warden
Supervisory Patent Examiner
Technology Center 1700

Conferees:

Ms. Jill Warden 
Mr. Patrick Ryan 